KNOWLEDGE

NO. 145 VOLUME 13 The colour magazine which grows into an encyclopaedia EVERY MONDAY 2/-

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ACCOUNTANCY

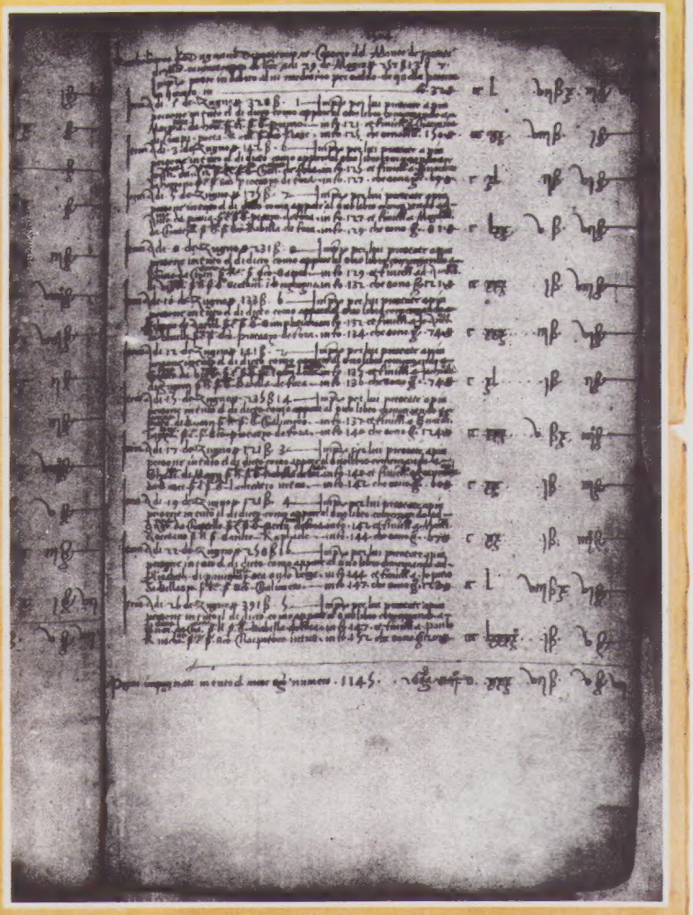
IN some museums today you can see bits of wood on which notches have been made. You can also see in many large organisations fantastic machines which can, in a short time, make calculations that could take a human being many years. Both the bits of wood and the great machines served or serve the same purpose: they assist in the recording, grouping, and interpretation of financial (money) transactions; in other words, the keeping of accounts or *accountancy*.

The history of accountancy is as old as that of money. As soon as a man had a lot of money, he naturally wanted to know exactly how much he had and what his income was. A merchant would wish to know what his profit was on any transactions or how much he was owed. Thus records of financial transactions had to be kept. In early times methods of recording these transactions were simple: they progressed from notches on sticks to something resembling a present-day housewife's domestic accounts or perhaps the methods you use to keep track of your expenditure. Seeing that these records were correctly kept – *book-keeping* – was at first a simple business. But book-keeping became more complex from the 13th century onwards, for in this century one of the most important developments in the history of accountancy took place in Italy. This was the introduction of *double-entry book-keeping*, which is still the basis of modern accountancy.

Double-entry book-keeping would take a whole article to explain properly, but basically it is a method of book-keeping in which all transactions are recorded in two separate accounts. It is designed first and foremost to ensure that the records have been entered and added up correctly. But it also makes it possible for the financial position of a firm or individual to be assessed quickly. This financial position is not altogether revealed by how much profit or loss is being made. It can only be properly assessed when considered with the *assets* and *liabilities*. Assets are cash, stocks, debtors, and property; liabilities are amounts owed.

In Venice in 1494 the first-known book on double-entry book-keeping appeared. Written by a Franciscan friar, Luca Pacioli, it described all the developments in accountancy during the previous two centuries. The book was later published in many languages and for a long time after was the accountant's bible.

The industrial expansion of the 19th century changed the work and status of the accountant. Up to this time, the owner of a business was usually in direct contact with his money. If anyone wanted to spend some money, they had to ask the owner for it, and he would therefore know how much had been spent. But when businesses became bigger, the owner ceased to be in control of the expenditure. Public ownership of companies increased, so that they ceased to be owned by individuals or their families but by a number of people known as *shareholders* instead.



A page from a 16th-century account book kept in Milan from 1502 to 1507. The Italians laid the foundations of modern accountancy

Previous page: An early example of double-entry book-keeping, dating from 1441, and (above) a florin, the coin of Florence at the time of the Medicis.

DISCOVERY OF THE EARTH

The map of Hecataeus, drawn in the 6th century B C. It shows only two continents surrounded by sea

EVERY continent in the world (except Antarctica and perhaps America) was inhabited 50,000 years ago. These primitive people were, in a sense, the first explorers. As their intelligence and numbers grew they migrated in all directions, even crossing the oceans in frail craft to settle in other lands.

Not everywhere, however, did mankind progress to the same extent. The first civilisations developed in China, Asia Minor, and Egypt. China was self-contained – few people went in or out. The foundations of discovery as we know it were laid by travellers from Asia Minor and the shores of the Mediterranean who were driven by curiosity and ambition to the far corners of the earth.

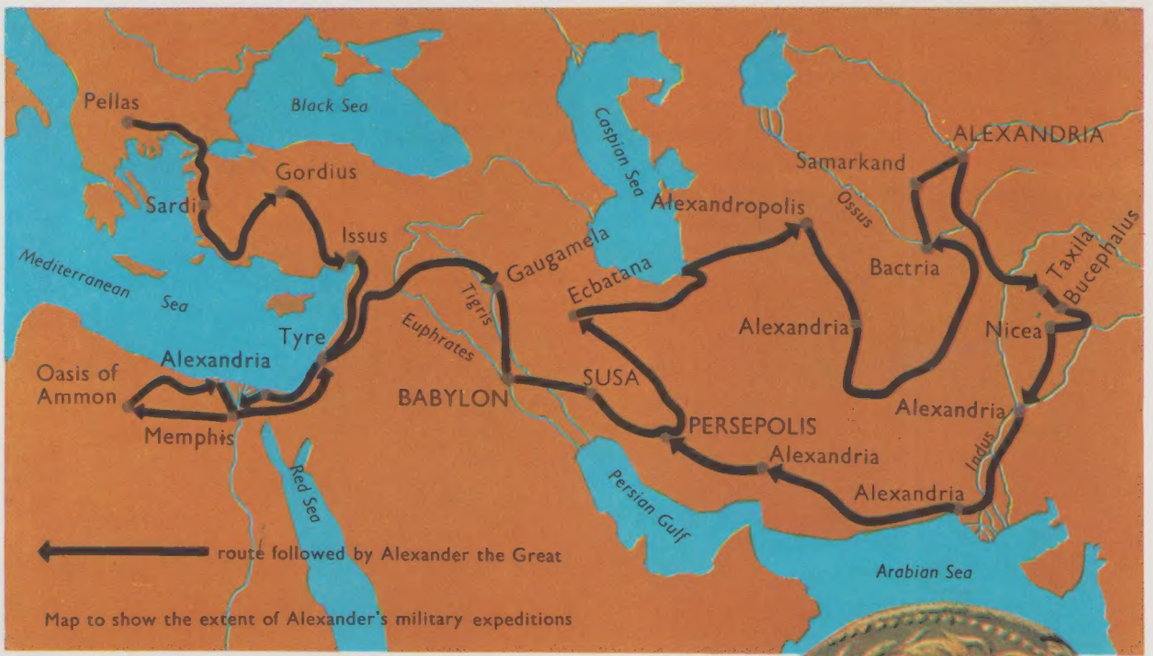
Knowledge of Europe

As long ago as 1000 B C the Phoenicians from Tyre had discovered the coast of Cornwall. The Greek Pytheas explored northern Europe and the British Isles in about 325 B C (see page 1376). The Roman Empire spread northwards, as well as to the east and south, so that by the end of the 2nd century A D the full extent of Europe was known. A map of the world was then prepared by Ptolemy, a Roman geographer (see page 1238), on which Europe was accurately charted.

Exploration of Asia

One of the oldest known maps is that of Hecataeus of Miletus (shown above). Hecataeus was a Greek scholar who was sent as ambassador to the Persians 2,400 years ago. If you compare his map of the world with one in an atlas, you will see that although the Mediterranean lands are accurately drawn, two-thirds of the world are missing. Hecataeus knew of only two continents, Europe and Asia, and could merely guess at their true size.

Mesopotamian merchants had traded with the peoples of India as long ago as 2000 B C, but the Greeks had little factual knowledge of Asia in the 5th century B C. This knowledge was first brought back by the armies of Alexander the Great in the 4th century B C. He spread his empire to the borders of India, founding cities and opening up trade routes. But his empire collapsed when Alexander died; it was not until the 13th century A D that serious exploration of Asia began again, replacing by facts the many rumours and legends that had sprung up.



The Mongol invasion of eastern Europe (in A D 1241) prompted Pope Innocent IV to send a Catholic mission to the Mongols. He chose Joannes de Plano Carpini (?1182–1252) to lead it. Friar Carpini and his companions rode from Lyons to Kiev, across the Dnieper, Don, and Volga rivers, and to the court of the great Khan in Mongolia where they were well received. Carpini's account of the journey, on which they had suffered terribly from fatigue, lack of food, and the cold, was

The head of Alexander the Great, from a coin struck in Thrace in the 4th century B C

Marco Polo (1254–1324)

the first accurate description of the Tartar empire and its customs. His book was used as a basis by later geographers such as Richard Hakluyt (1552–1616).

Knowledge of Asia was further enlarged by two Venetian merchants, the Polo brothers, who wished to trade with the Mongols. A relative, the great Marco Polo, joined them on their second journey and spent the next 26 years of his life travelling through Mongolia, China, India, and Persia (see pages 209–211). He visited many new lands, including Malaya, Ceylon, and also Indonesia, where the fierceness of the natives prevented him from exploring the interior.

Discovery of America

The overland route to the rich markets of the East was long and hazardous. A quicker route had to be found; its discoverer would make his country the richest in Europe.

Navigators ventured out into the Atlantic, following the coast of Africa as far southwards as they dared. In 1497 Vasco da Gama succeeded in rounding the Cape of Good Hope (unaware that he was following a route known to the Egyptians in the 7th century B C) and completed the journey to India by sea.

But a new method of reaching the Indies had already been proposed – by sailing westwards. Paul Toscanelli (see page 496) had resurrected the ancient theory that the world was round. Christopher Columbus bravely set out across the Atlantic in 1492 to prove this theory right (see pages 1959–1961).

The Vikings had visited the coasts of Greenland and north America in the 9th century, but their knowledge had been lost. In the 15th century no one suspected the existence of a vast continent to the west. Even Toscanelli thought that India lay a short distance across the sea. Unaware that he had discovered this hitherto unknown continent, Columbus named the islands he found the West Indies. Later explorers proved that the way to India was in fact barred by a huge land mass.

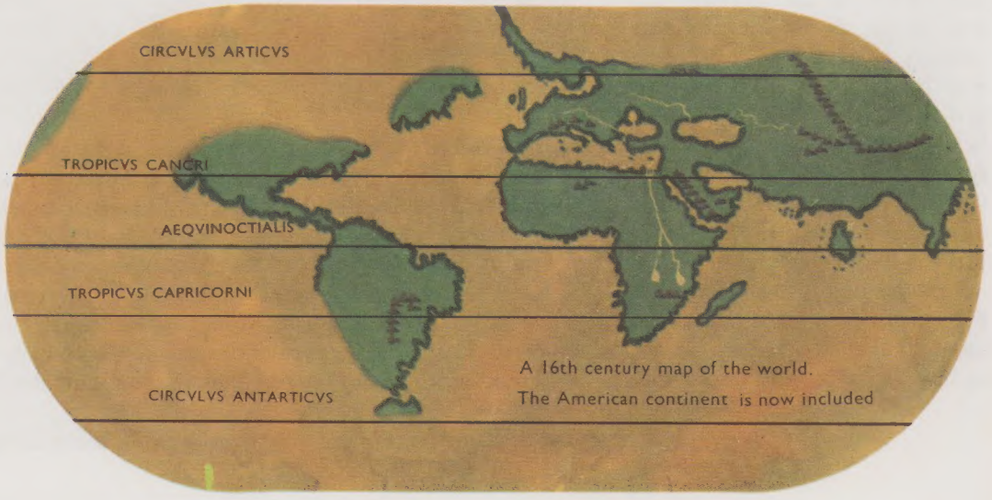
Amerigo Vespucci gave his name to this land in 1498, when he explored the coast to the south. John and Sebastian Cabot from England rediscovered the lands known to the Vikings. Verrazzano explored the coast of north-east America in 1524. Balbao first sighted the Pacific Ocean in 1513.

After two months at sea, Christopher

Perhaps the most important discovery of all was that of Ferdinand Magellan (see pages 520–522). His expedition of 1519 to 1522 proved that America was a separate continent, divided from the East by the Pacific Ocean, and also confirmed that the world was round.

The rich lands discovered in the west then became as valued a prize as the markets of the Indies had formerly been. From the beginning of the 16th century the Portuguese and Spaniards established colonies in south and central America from the Atlantic to Pacific coasts. They penetrated all but the most dense jungles (some of which remained uncharted until the present century), using the many rivers as highways.

These *conquistadores* found vast mineral resources, and one, Hernan Cortes (see pages 10–11), conquered the Aztec nation and founded Mexico.



A 16th century map of the world. The American continent is now included

Columbus lands on San Salvador, little realising that he has discovered a new continent

THE DISCOVERY OF AUSTRALIA

Early maps of the world usually showed a huge land mass in the south called *terra australis nondum cognita*, the unknown land of the south. Ancient geographers were convinced that such a continent existed to balance the northern land masses. During the 17th century several Dutch sailors reported seeing or landing on a coast believed to be that of the 'southern land'. Abel Tasman searched for it in 1642 but found instead the islands of Tasmania and New Zealand. It was Captain Cook who dispelled the legend but established the existence of Australia, in two voyages between 1768 and 1775. He explored the east coast extensively, as well as New Zealand, and claimed Australia for England in 1770. Seventeen years later the first colonists arrived from the British Isles.

On this 16th-century map the 'unknown continent to the south' is marked

EXPLORATION OF THE ANTARCTIC

Exploration of polar regions was greatly hindered by the amount of ice covering both land and sea. By the 18th century it was known that at least two-thirds of the region within the Antarctic Circle were covered by land.

The English explorer Robert Scott (1868–1912) added much to our knowledge of Antarctica (see page 1408). He was preceded to the South Pole by the Norwegian Roald Amundsen (see page 2028), an explorer equally famous for his work in north polar regions which he crossed in an airship in 1926. Expeditions went to Antarctica from Australia in 1911; from Germany in 1912; from Norway (1927–1937). Other countries claimed territories in Antarctica, and today there are permanent weather and research stations there.

Roald Amundsen (1872–1928)

SOME DATES IN THE EXPLORATION OF THE WORLD

Africa circumnavigated	7th century BC
Pytheas explores Europe and the British Isles	325 BC
Vikings sail to north America	9th century AD
Marco Polo in China	13th century
America rediscovered	1492
World first circumnavigated	1522
Australia discovered	18th century
Interior of Africa explored	19th century
North and South Poles reached	20th century

EXPLORATION OF AFRICA

The immensity of the African continent was known to the Egyptians 5,000 years ago, but it was not fully explored until the last century (see pages 2156–2157). The Sahara prevented exploration from the north, and navigators on the way to the Indies preferred to skirt the coast rather than go inland.

The Dutch established a settlement at the Cape in 1652, but central and west Africa remained unexplored.

A Frenchman, René Auguste Caillé (1799–1838), was the first to penetrate west Africa as far as Timbuktu and return alive.

The famous missionary David Livingstone (see pages 1194–1195) and Henry Stanley both travelled extensively through central Africa.

route of Caillé

route of Livingstone

route of Stanley

The African continent

EXPLORATION OF THE ARCTIC

The search for a northern route to India led explorers to the arctic regions of north America and Russia in the 15th century. The climax of polar exploration was reached when Robert Peary crossed the ice to the North Pole in 1909.

Robert Peary (1856–1920), *first to reach the North Pole*

The conquest of the poles marked the end of a chapter in world exploration. Today, the use of aeroplanes makes it possible to survey and chart even the most inaccessible parts of the earth.

The explorers of the 20th century have turned their eyes away from the earth towards the planets.

LIFE IN ANGLO-SAXON

SOON after the collapse of Roman rule in Britain, early in the 5th century, Germanic tribes (Angles, Saxons, and Jutes) from present-day Holland, north Germany, and Denmark, arrived and settled throughout England (see page 129). These people were backward, pagan, and frequently at war with each other; yet by the time the Normans arrived in 1066 a dramatic transformation had taken place – the country they took over was unified and Christian. What had happened? A single English nation had come into being.

In the 6th and 7th centuries England formed not one but several kingdoms. When Alfred (see page 1882) died in 899 she was one. And in Anglo-Saxon times the foundations were laid of many institutions which played a great part in the development of English social life.

Anglo-Saxon law and society

We must begin by trying to understand how Anglo-Saxon society was organised. This means discovering to whom an Anglo-Saxon owed allegiance and who protected him. If you were murdered today, the state would try to seek out your murderer and punish him. But in Anglo-Saxon England this concept of the 'state' was only just emerging. When the invaders arrived their allegiance was of necessity to the military leader of their particular group or tribe. However, as military considerations gave way to the need for civil customs and laws, so allegiance of another kind developed. This was allegiance to the family unit – the unit of *kith* and *kin*.

Blood-ties were very strong among the early English and far wider than they are today. A whole race would think of themselves as belonging to the same 'family'. The West Saxons, for instance, called themselves *Gewissae* after their ancient founder Gewiss. The great 8th-century historian Bede estimated populations in families, not individual people.

If a man committed a crime the burden fell on his entire kin. They could defend him and proclaim his innocence, but equally they could be the subject of the victim's revenge as much as the criminal himself. The injured family would demand a quite specific retribution from the criminal's kin. This would be based on the *wergild* of the injured man. The wergild was a blood-price, the value set on a man's life, and varied according to his rank. Naturally, bitter vendettas arose between enemy families, and such blood-feuds would sometimes last for generations. But as time went on, other groups, apart from the family, began to assume legal responsibility for justice. These groups could be a man's workmates – his guild, or *gegildan*; or the men of his district, his *tithing*; or eventually, if he had attached himself to one, his lord. These would be liable to assume responsibility for an accused man. It was clearly very dangerous not to have anyone to answer for you, and indeed this was the origin of outlawry; a man without such support was literally 'outside the law'. This came to be an offence, and outlaws could even be killed with impunity.

Home from the fields, Anglo-Saxon peasants relax for

Now the law was not simply a question of paying back an eye for an eye (or a death for a death). Courts and punishments (usually mutilation) did exist. Indeed the court system based on the *shires* and their sub-divisions, the *hundreds* and *wapentakes*, became highly organised. But the law as such was largely unwritten. It took a long time for the law courts to become universal sources of justice, and for years they continued to exist side by side with private vendettas.

Let us imagine that you were accused of a serious crime – cattle-stealing, perhaps, for the Anglo-Saxons treated this very harshly. You would be summoned to your local hundred court; the hearing would probably take place in the open air. But you would not go alone, for some of your tithing or kin would have to accompany

you and testify on your behalf; these would be your oath-helpers or *borh*. If they confessed your guilt *they* would have to pay a fine based on your wergild; if they swore that you were innocent their word might be put to test by *ordeal*. This was a primitive physical test for detecting guilt. You might be put through a 'fiery trial' like carrying a red-hot iron, walking barefoot over glowing plough-shares, or extracting a stone from boiling lead; if you succeeded you were innocent. Or you might have to undergo a 'watery trial'; this was based on a curious principle that blessed water rejected a guilty person by floating him to the surface, whereas innocents sank naturally. The suspect was meant to be tied to a rope, but the system may

a meal. On the right: a thegn and his wife

have brought many to untimely ends at the bottom of the village pond! The mediaeval practice of ducking witches and 'scolds' was a survival from this custom.

A country people

The Anglo-Saxons were a country people, more at home in villages, farms, and hamlets than in the towns they inherited from the Romans. These and the magnificent roads fell into decay. But the Anglo-Saxons worked wonders on the countryside. They cleared and ploughed vast open spaces in the forests that had covered Britain from prehistoric times, and sowed them with wheat, barley, and oats.

Apart from slaves all Anglo-Saxon men were 'freemen'. The Anglo-Saxon's allegiance to his employer was *personal*, whereas under the *feudal system* growing up on the Continent the peasant's allegiance was *territorial*; that is, he was tied to a particular piece of land irrespective of who owned it. Yet gradually something like the feudal system evolved. Whereas they had first settled in scattered groups by a spring or stream, Anglo-Saxons came to congregate in manors centred round the hall of their lord, and many Anglo-Saxons had to do services in return for their land.

From the first there were two basic classes in society – the nobles or *eorls* and the freemen or *ceorls*, but the gap between them widened. The threat of the Danish invasions in the 9th century gave rise to a new military class – the *thegns*. The power of the eorls and the thegns grew; they began to hold private courts on their estates, and some of them had the privilege of *infangenetheof* – the right to hang a thief caught red-handed. The lot of the peasant, on the other hand, deteriorated. Although in theory he was free, he was restricted by a growing number of statutory obligations and services to his lord. According to these he would be classed as a *geneat*, *cottar*, or *gebur*.

The England of the first Anglo-Saxons was a backwater. Culture had retreated before the barbaric hordes into the 'Celtic fringe'. The civilisation of continental Europe stopped short at the inhospitable shores of Britain, while Celtic Christianity developed apart and in isolation, in Scotland, Ireland, and Wales. It was Augustine's arrival in 597 that brought England once more into the mainstream of European life, not only as part of the Roman Church, but also as part of the European trade community. The spread of Christianity led to a revival of the towns which became in turn market centres. English coinage was amongst the best in Europe; and the Sutton Hoo treasure contained objects from as far afield as the eastern Mediterranean.

We would indeed have a totally wrong idea of the Anglo-Saxons if we thought of them as barbarians. The Church encouraged education. Bede mentions a boy called Esica who was placed in a monastery to pursue his studies when only three years old! Great libraries were collected; manuscripts like the Lindisfarne Gospels were beautifully illuminated; and Northumbrian culture gained such a reputation that Charlemagne sent for Alcuin to teach him logic, rhetoric, and astronomy.

TIN

TIN has a long history. The first known objects made of pure tin were found in Egypt and date from the 18th Dynasty (1580–1350 B C). Since there are no natural deposits of tin in Egypt these objects, a ring and a bottle, must have been imported. But tin has a far longer history than this, for as bronze is an alloy of tin and copper, tin played its part in the important advances of mankind associated with the Bronze Age which began between 3000 and 2000 B C and lasted in Asia Minor until about 1000 B C. In England the Bronze Age lasted until 400 B C; and for at least 600 years before this the Phoenicians had been working tin mines in Cornwall (Cornwall remained the world's largest producer of tin until the 19th century).

In these remote times one metal was used almost exclusively: all weapons or tools were made from this single metal. As iron, with more obvious advantages than either tin or copper, was discovered, so the Iron Age replaced the Bronze Age. But today things are different and metals are used in accordance with their own highly specialised advantages. Tin, though not as abundant as some of the less familiar metals like vanadium or lithium, is nevertheless among the best known and important of metals largely because of its great qualities of chemical resistance. Coatings of tin are used to prevent such tough metals as iron and steel from rusting and corroding, while its alloys (the most important of which remains bronze) combine tin's natural resistance with the strength needed for such objects as the propellers of colossal liners and battleships.

Tin is not found pure, but has to be extracted from tin ores, chiefly *cassiterite* (SnO_2).

Bronze, the most important of the numerous alloys, is an alloy of tin and copper, containing a major proportion of copper. It is widely used in sculpture and also to make coins. British coins contain about 95 per cent copper, 4 per cent tin and 1 per cent zinc.

Pewter is an alloy of tin and small amounts of copper, lead, bismuth, and sometimes other metals. From the 16th to the 18th centuries it was commonly used for all sorts of household utensils, but is seldom used today. Small amounts of tin are used for making *solder*, an alloy of tin and lead, and for the 'tinning' or coating of copper cooking vessels to prevent them from tainting the food. The metallic paste which dentists use to fill teeth is an alloy of tin and mercury called tin *amalgam*.

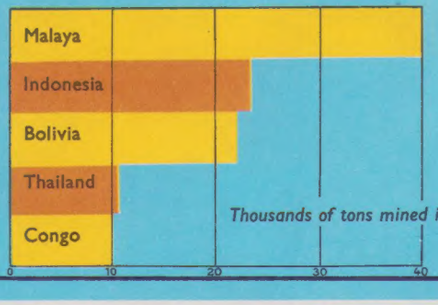
A tin-lined copper cooking vessel

Chocolate in a tin-foil wrapper

Tinfoil-wrapped cheese

THE MAJOR PRODUCERS OF TIN

Over a third of the annual tin production of the world comes from Malaya. In Malaya ore is smelted at Penang and Singapore and shipped as the metal; however, Indonesian, Bolivian, Thailand, Nigerian, and Congo ores are shipped to other parts of the world to be smelted.



The chart shows the output of the major tin-producing countries in 1960. In addition Russia produces an estimated 15,000 tons and China 20,000.

USES

Tinplate food cans

Most of the world's tin production is used in the form of alloys or for plating iron and steel.

Tin is resistant to dilute concentrations of most organic acids and does not rust. The acidity of many foods can act slowly on unprotected steel and taint the food. Tin is particularly resistant to fruit and vegetable juices, and is therefore of major importance in the canning industry.

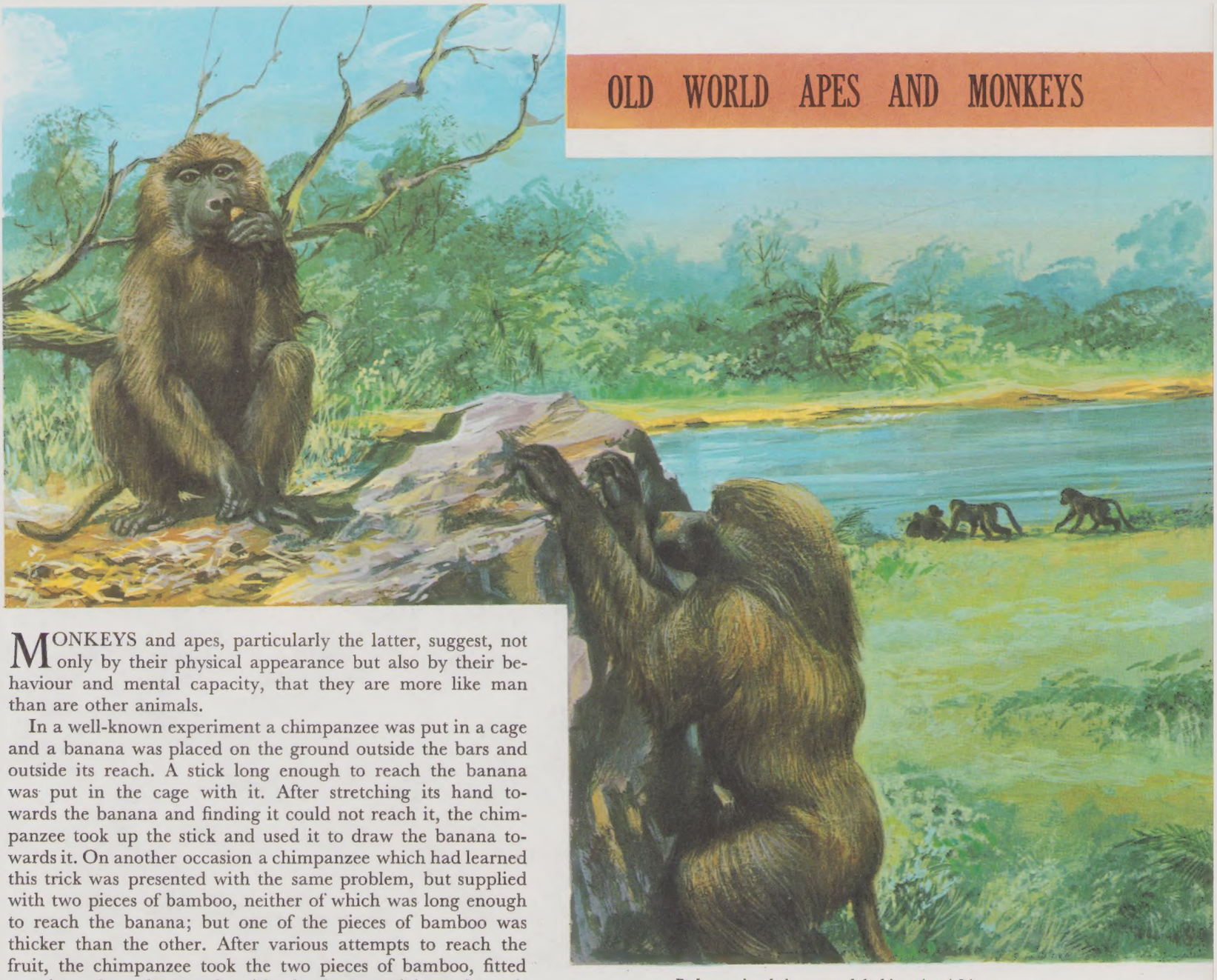
THE CHEMICAL AND PHYSICAL PROPERTIES OF TIN

Symbol: Sn (stannum); Atomic number 50; Atomic weight 118·70; Melting point 231·85°C; Boiling point about 2260°C; Density 7·31 (white tin) at 20°C, 5·75 (grey tin) at 20°C.

Tin is a bright silvery metal which is both malleable (can be beaten into various shapes) and ductile (can be drawn out into wires). It is softer than zinc and harder than lead. It is not affected by air or water. It forms compounds in which it may be either divalent or tetravalent.

When it is kept for long periods below 13°C tin sometimes undergoes a very peculiar change in which it loses its metallic white appearance and crumbles to a grey powder. Organ pipes were once often made of tin and sometimes, in churches in very cold climates, it was not unknown for this unfortunate change to take place and for the pipes to crumble away. A bar of pure tin, when bent, makes a curious creaking sound, 'the cry of tin', which is made by the crystals of the metal grating over one another. Between its melting point of 231·85°C and boiling point of 2260°C tin has a greater temperature range as a liquid than any other known substance.

OLD WORLD APES AND MONKEYS



Baboons in their natural habitat in Africa

MONKEYS and apes, particularly the latter, suggest, not only by their physical appearance but also by their behaviour and mental capacity, that they are more like man than are other animals.

In a well-known experiment a chimpanzee was put in a cage and a banana was placed on the ground outside the bars and outside its reach. A stick long enough to reach the banana was put in the cage with it. After stretching its hand towards the banana and finding it could not reach it, the chimpanzee took up the stick and used it to draw the banana towards it. On another occasion a chimpanzee which had learned this trick was presented with the same problem, but supplied with two pieces of bamboo, neither of which was long enough to reach the banana; but one of the pieces of bamboo was thicker than the other. After various attempts to reach the fruit, the chimpanzee took the two pieces of bamboo, fitted one into the other, and, with the longer stick so formed, retrieved the banana.

Even more extraordinary, a tame chimpanzee was given a brush and paper and coloured paints, and it played with them just as a young child will, scribbling and daubing in different colours and even producing very elementary patterns.

The family life of wild apes is in many ways more 'human' than that of any other animals. This is seen especially in the way the young are brought up. They always spend a long period with their mother learning what food to eat, how to find it, what other animals they need be afraid of, the way about the area of jungle they inhabit, and other lessons. A young ape, brought up by humans and then released in the jungle, is quite helpless. This shows that they rely, as we do, more on learning than on instinct, whereas most other animals are governed chiefly by inborn instinct.

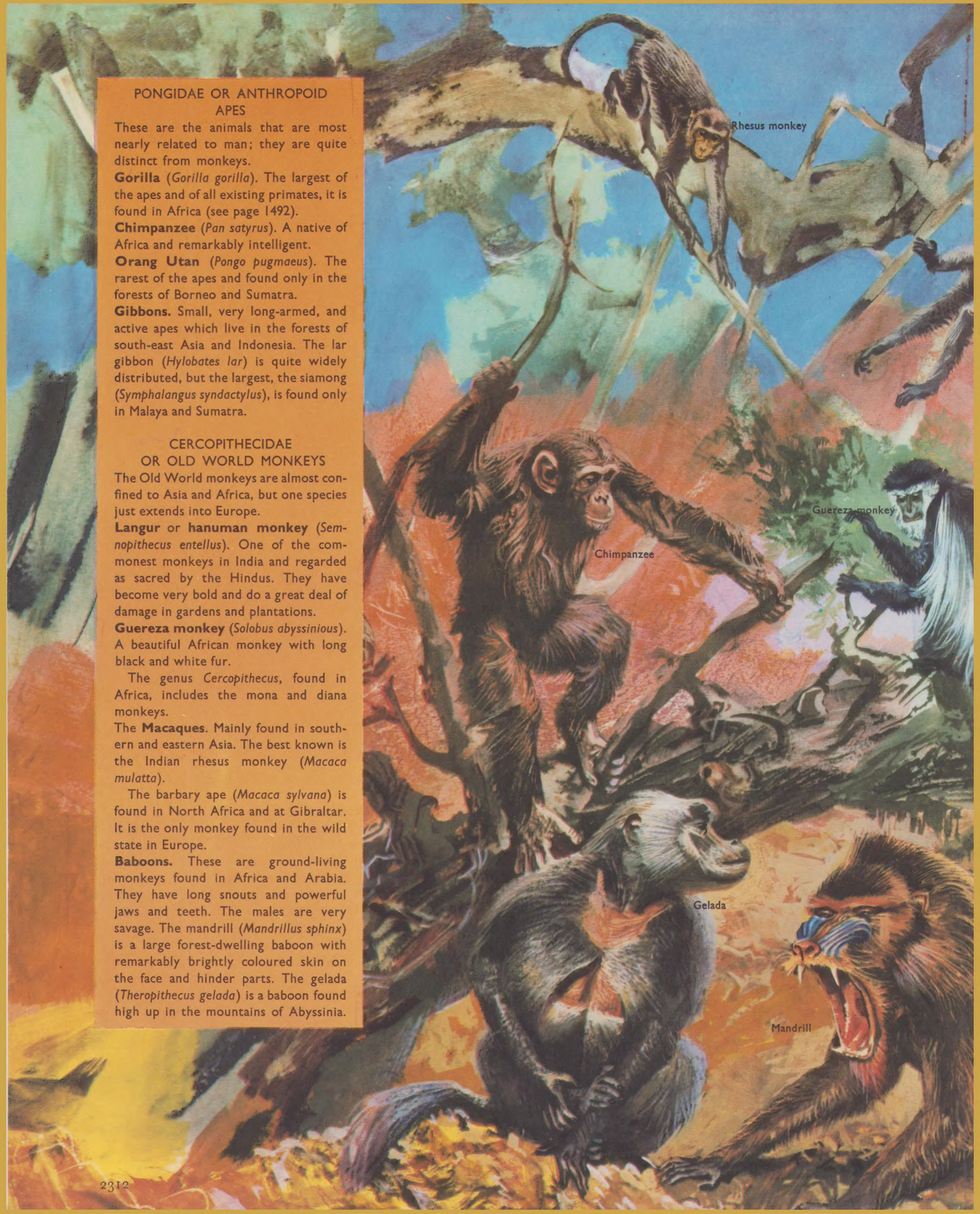
Most apes are arboreal; that is, they live among the trees. Their limbs are long with flexible joints; their hands and feet have five digits, one of which is opposed to the others, as our thumb is, to enable them to grasp the branches. Some monkeys have a prehensile tail, which acts as a fifth limb when they are climbing.

Classification of apes and monkeys

The monkeys, apes, and man form part of the Order of mammals called the *Primates* (lemurs and similar animals are also included in this order). They are classified into three main groups, the *Ceboidea*, or New World monkeys, the *Cercopithecidae*, or Old World monkeys, and the *Hominoidea*, which include the anthropoid, or man-like, apes and man himself. We are concerned here with the last two groups; the New World or American monkeys will be described in another article.

In some books you will find a classification into two main groups: the *Platyrrhini* or 'flat-nosed' monkeys which are the ones that inhabit America (we have called them Ceboidea), and the *Catarrhini* or 'narrow-nosed' group which are the apes and monkeys of the Old World. The classification we have adopted is better because it includes the anthropoid apes together with man in the Division Hominoidea, and so lays stress on the fact that they are more closely related to man than they are to monkeys.

The earliest fossil monkeys are found in strata of the Oligocene period, about 40,000,000 years ago.



PONGIDAE OR ANTHROPOID APES

These are the animals that are most nearly related to man; they are quite distinct from monkeys.

Gorilla (*Gorilla gorilla*). The largest of the apes and of all existing primates, it is found in Africa (see page 1492).

Chimpanzee (*Pan satyrus*). A native of Africa and remarkably intelligent.

Orang Utan (*Pongo pugmaeus*). The rarest of the apes and found only in the forests of Borneo and Sumatra.

Gibbons. Small, very long-armed, and active apes which live in the forests of south-east Asia and Indonesia. The lar gibbon (*Hylobates lar*) is quite widely distributed, but the largest, the siamong (*Symphalangus syndactylus*), is found only in Malaya and Sumatra.

CERCOPITHECIDAE OR OLD WORLD MONKEYS

The Old World monkeys are almost confined to Asia and Africa, but one species just extends into Europe.

Langur or **hanuman monkey** (*Semnopithecus entellus*). One of the commonest monkeys in India and regarded as sacred by the Hindus. They have become very bold and do a great deal of damage in gardens and plantations.

Guereza monkey (*Solobus abyssinious*). A beautiful African monkey with long black and white fur.

The genus *Cercopithecus*, found in Africa, includes the mona and diana monkeys.

The **Macaques**. Mainly found in southern and eastern Asia. The best known is the Indian rhesus monkey (*Macaca mulatta*).

The barbary ape (*Macaca sylvana*) is found in North Africa and at Gibraltar. It is the only monkey found in the wild state in Europe.

Baboons. These are ground-living monkeys found in Africa and Arabia. They have long snouts and powerful jaws and teeth. The males are very savage. The mandrill (*Mandrillus sphinx*) is a large forest-dwelling baboon with remarkably brightly coloured skin on the face and hinder parts. The gelada (*Theropithecus gelada*) is a baboon found high up in the mountains of Abyssinia.

Grey gibbon
Orang utan
Langur
Baboon
Gorilla

DURING the Palaeolithic (Old Stone Age) and Mesolithic (Middle Stone Age) periods man hunted animals and collected wild plants for food; but in the Neolithic (New Stone Age) he was able for the first time to grow his own food and breed his own domestic animals. Above you can see a typical Neolithic farmstead on the shores of the Mediterranean.

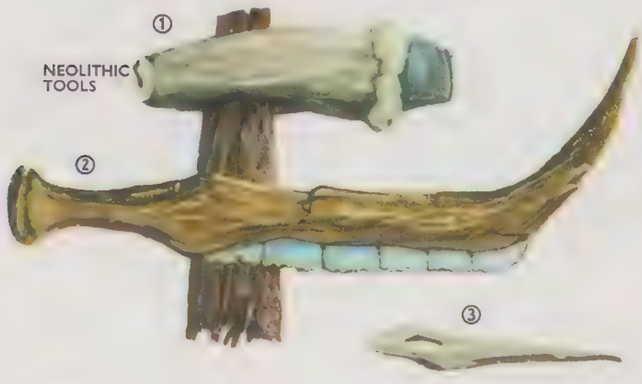
This important change, sometimes called the Neolithic Revolution, began in the eastern Mediterranean, in Palestine, Syria, Iraq, and Iran about 8,000 years before Christ. There, wheat and barley grew wild. Someone must have noticed that by collecting the wild seed and replanting it, grain could be made to grow wherever it was wanted. At first it would have been planted in small plots resembling a garden, in which the ground was dug with a weighted digging-stick, or a wooden hoe cut from a forked branch. Grains of ancient *emmer* wheat have been found in excavations at Jarmo in Iraq dating from 6000 B C. Peas, beans, and lentils were also widely cultivated about this time. Growing crops must often have been the women's job, while the men were hunting.

THE FIRST FARMERS

The oldest town in the world

The oldest town so far discovered was at Jericho. As long ago as 8000 B C people were living beside its spring. When the first village, built of mud bricks, fell into decay, a new one was built on top of it, and this process was repeated many times until a mound of collapsed villages 45 feet high had grown up. Many such village mounds, called *tells*, can be seen in the Middle East today. The houses of Neolithic Jericho were large, with rectangular rooms grouped around courtyards. Cooking was carried out over an open fire in the courtyard. The walls of the houses were built of hand-made cigar-shaped bricks of mud; the floors were of clay covered with highly polished red or cream plaster, on which lay circular rush mats. The roof was made of mud on plaited reeds. The earliest people at Jericho had no pottery. Their pots and dishes were carved out of the soft local limestone and then highly polished. They used a variety of tools and weapons made of flint or obsidian – knives, borers, scrapers, arrowheads, and sickles.

① *An axe; the stone is inserted in an antler.* ② *A flint and bone sickle.* ③ *A bone needle*



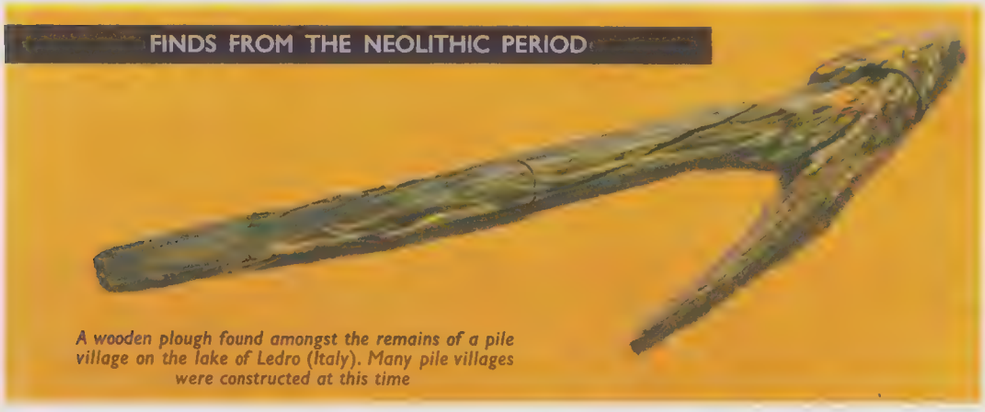
A piece of carbonised cloth of Neolithic date; the weave is fairly close and regular

It was in south-western Asia, too, that the wild ancestors of sheep, cattle, goats, and pigs, as well as dogs, were found. Bones of all these animals were identified at Jarmo, and the remains of goats were also found at Jericho. Our domestic cattle are probably descended from the *Bos primigenius* – the now extinct wild auroch.

The houses of these first farmers differed from area to area, depending on local building materials. Timber was scarce in the Middle East, so mud bricks were used. In Europe timber was plentiful. Frequent rain necessitated a pitched roof.

In order that the ground could be cultivated special tools had to be invented. These were the tools that today we take for granted: hoes, scythes, axes, and eventually ploughs. Axes in particular were necessary if man was to clear the forests to make room for a growing population. Flint was the best stone for the blade, and Neolithic man had found that polishing increased its efficiency.

Pottery making may have begun accidentally. Possibly baskets lined with clay to hold water caught fire; the clay lining baked hard, and was found to have become water-tight.



A wooden plough found amongst the remains of a pile village on the lake of Ledro (Italy). Many pile villages were constructed at this time

Neolithic figurines from Sumer

Neolithic vases from Mesopotamia

Spread of farming

As we have seen, the first farmers belonged to the Neolithic Age. It used to be thought that there was a gap between the primitive nomadic life of the Palaeolithic Age and the 'rural village' economy of the Neolithic. However, it is now known that there was no such gap, and that in the interval flourished a number of 'hunting-fishing' cultures called Mesolithic. Gradually the Mesolithic gave way before the advance of Neolithic farming.

By 3000 B C there were Neolithic communities with domestic animals and husbandry techniques in western and northern Europe. Cereals and sheep probably came with immigrant Neolithic peasants from Asia, but the communities were composed mainly of native Mesolithic hunters and fishermen. Neolithic culture rapidly spread over most of Europe, although in the *taiga* of northern Russia the Mesolithic Age survived until only a few centuries before Christ.

MONT BLANC

'SO many travellers have been going up Mont Blanc lately, both in fiction and in fact, that I have recently heard of a company to employ Sir Joseph Paxton [the designer of the 1851 International Exhibition] to take it down. Only one of those travellers, however, has been enabled to bring Mont Blanc to Piccadilly and, by his own ability and good humour, to thaw its eternal ice and snow, so that the most timid ladies may ascend it twice a day without the smallest danger or fatigue.' Thus Charles Dickens introduced the alpine adventurer Albert Smith to a travellers' club in 1854. Albert Smith was the Mont Blanc sensationalist; he did for it what our newspapers have done for Everest. After his ascent in 1851 he put on a Mont Blanc show in London six years running; fashionable London flocked to the Egyptian Hall where they were served champagne and oysters as they listened to his story. Suddenly Mont Blanc, which for hundreds of years had towered high above the Alps without tempting anyone to climb it, became an obsession. Today Mont Blanc needs no publicity; it is famous both for the acts of heroism and stupidity which it has provoked, and because it is, if you exclude the Caucasus, the highest mountain in Europe.

Vallée de Chamonix
Aiguille du Midi 12,608 ft
Dente du Géant 13,170 ft
Aiguille de Bionnassay 13,291 ft
Mt Blanc 15,781 ft
Aiguille de Trélatête 12,860 ft
Aiguille Noire de Pouterey 12,379 ft
Aiguille de glacier 12,523 ft
Val Veni

Map of the central part of the Mont Blanc range

Southern face of the Mont Blanc

The accursed mountain

Thousands of men had crossed the Alps from the days of Hannibal to Napoleon, but strangely none had felt the urge to climb Mont Blanc. Perhaps one reason was the legend and superstition which surrounded the mountain: one book told how the people of Chamonix, a village in the shadow of the great peak, believed that 'witches played their pranks upon glaciers and danced to the sound of instruments' on the snowy slopes. It was known in the Middle Ages as 'Mont Maudit' or the 'accursed mountain', and it was not until the 18th century that this taboo peak featured on maps as Mont Blanc or the White Mountain.

It was the French scientist de Saussure who was responsible for lifting this shroud of mystery from Mont Blanc. His offer of a reward to anyone reaching the summit stimulated Balmat and Paccard, the two Chamonix men who made the first successful ascent in 1876. Soon men were coming from England, Russia, and Italy to attempt the climb; all Chamonix turned out to honour the successful; enormous bouquets would be presented and cannons fired. But although no longer surrounded by an aura of superstition, Mont Blanc's reputation became even more sinister because of the long toll of deaths it exacted from rash and inexperienced climbers. Between 1820 and 1898 47 people lost their lives; some of them suffered the ghastly fate of being swallowed up by glaciers from which they would appear deep-frozen about 40 years later. A popular English guide book published in 1860 maintained that attempting to climb Mont Blanc was a symptom of madness.

It is no longer a great feat to climb Mont Blanc; hundreds of people have reached the summit – yet the ascent still attracts mountaineers from all corners of the world.

THE GLACIERS

A view of the largest glacier, the Mer de Glace, at about 4,500 feet

The ice which accumulates on the higher parts of the range gradually makes its way down towards the valleys by one or other of the great Mont Blanc glaciers (see page 2229). The most important of these flow to the north and west. The Mer de Glace (Sea of Ice) is the second largest glacier in the Alps and flows into the Vallée de Chamonix. The Glacier des Bossons also flows towards this valley. The south and east slopes of the range are particularly steep, and the glaciers here, notably the Glacier de la Brenva, the Glacier du Miage, the Glacier de Freiney, and the Glacier du Brouillard, are all deeply crevassed. Some of the most difficult climbs in the Mont Blanc range include these glaciers.

SCIENTIFIC VALUE

Its great height once made Mont Blanc a valuable base for meteorological and astronomical observations. Two observatories were built on it for this purpose towards the end of the 19th century.

The first, the Vallot observatory, 13,500 feet up on the rock outcrop between the summit and the snow peak called the Dome du Gouter, is now used as a refuge for climbers.

The second, the Jansen observatory, was built on the summit in 1893, but by 1906 the ice beneath it had sunk and its foundations were washed downhill. No trace of it now remains.

Today, however, the widespread use of high-altitude weather balloons has reduced the scientific importance of high mountains. We can now make observations far higher than Mont Blanc's summit of 15,781 feet.

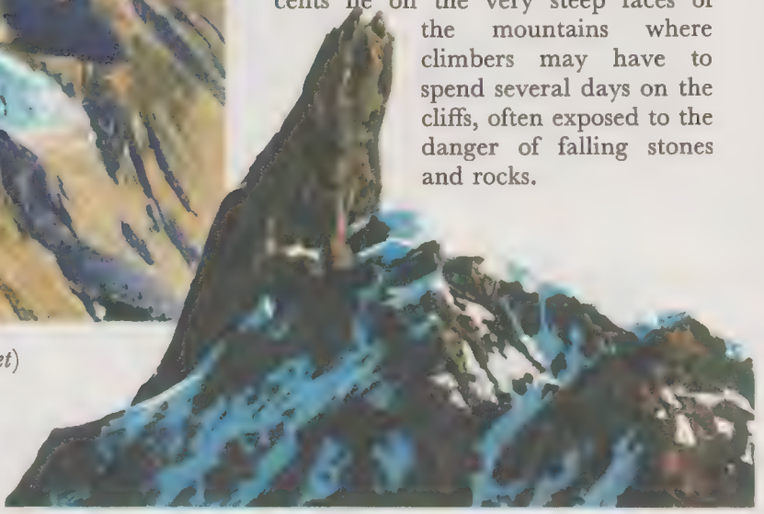
range, showing the sharp summit of the Aiguille Noire de Peutérey (12,379 feet)

Neighbouring peaks

The ascent of Mont Blanc is over ice and snow for much of the way, and so is greatly affected by weather conditions, but the lower neighbouring peaks are essentially rock climbs.

Most of these summits were climbed for the first time between 1870 and 1900, although one or two very difficult ascents were not accomplished until after the First World War. Today all the ridges have been climbed, and all the peaks have been conquered too, most of them by several routes.

There are routes which as yet are unclimbed, and most of these new ascents lie on the very steep faces of the mountains where climbers may have to spend several days on the cliffs, often exposed to the danger of falling stones and rocks.

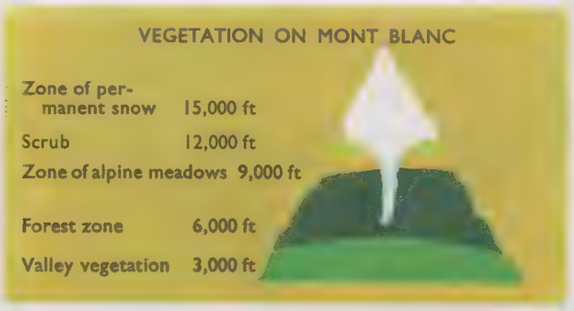


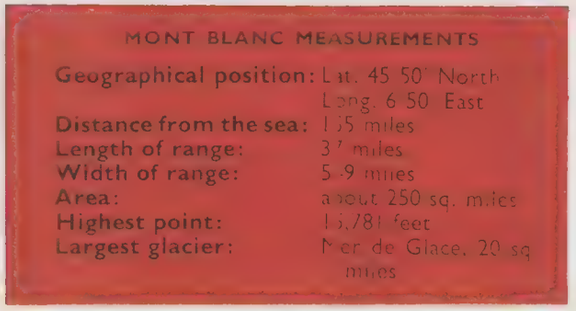
The rock peak of the Dent du Géant (the Giant's Tooth), 13,170 feet

The highest mountains of Asia, America, Africa, and Europe

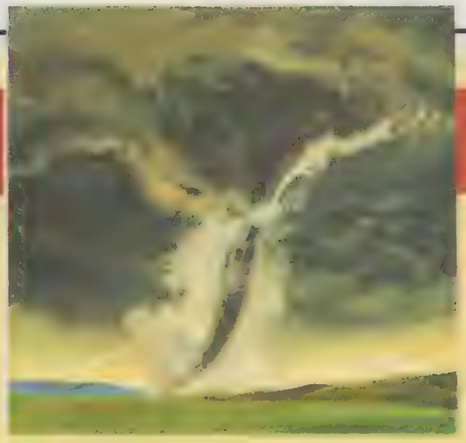
Mont Blanc, the summit of which is in France, is the loftiest peak of a great mountain massif, which forms the frontier zone between France and Italy and France and Switzerland. The range is roughly elliptical in outline, with the major axis extending from south-west to north-east for about 30 miles; it is bounded by two great valley systems, the Vallée de Chamonix to the north-west and the Val Veni and Val Ferret to the south-west. Most of the range is composed of coarse granite, and this rock has given rise to numerous narrow ridges with soaring towers and pinnacles. These make the subsidiary sharp-pointed summits which are described by the French word for needle – *aiguille*. These ridges are well known to mountaineers throughout the world, for they provide some of the best rock climbing in the Alps. Nevertheless the ascent of Mont Blanc itself can be made almost entirely over snow and ice without rock climbing. This is because the range is exposed to the moist air which, especially in winter, crosses France from the Atlantic Ocean. Indeed the summit of Mont Blanc is a dome of ice, and as its thickness varies with the seasons and from year to year, the height of the summit alters.

The ice cap which forms the summit of Mont Blanc itself; the thickness of the ice varies from season to season


VEGETATION ON MONT BLANC
Zone of permanent snow 15,000 ft
Scrub 12,000 ft
Zone of alpine meadows 9,000 ft
Forest zone 6,000 ft
Valley vegetation 3,000 ft


MONT BLANC MEASUREMENTS
Geographical position: Lat. 45 50' North
Long. 6 50 East
Distance from the sea: 155 miles
Length of range: 37 miles
Width of range: 5-9 miles
Area: about 250 sq. miles
Highest point: 15,781 feet
Largest glacier: Mer de Glace, 20 sq miles

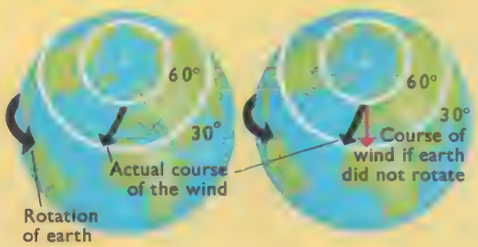
The destructive violence of a hurricane



The characteristic 'funnel' of a tornado

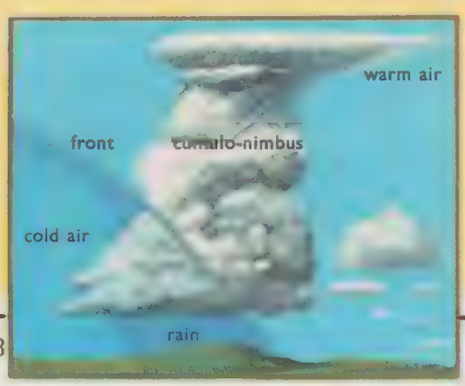
The terrifying sight of a waterspout

THE earth's atmosphere is rarely absolutely still; it is being continually disturbed by winds of strengths varying from a whispering breeze to a raging tornado. The wind is, of course, a large mass of air on the move. It will always tend to blow from an area of high pressure to an area of low pressure. In the diagram below we have cold air in the Arctic region at high



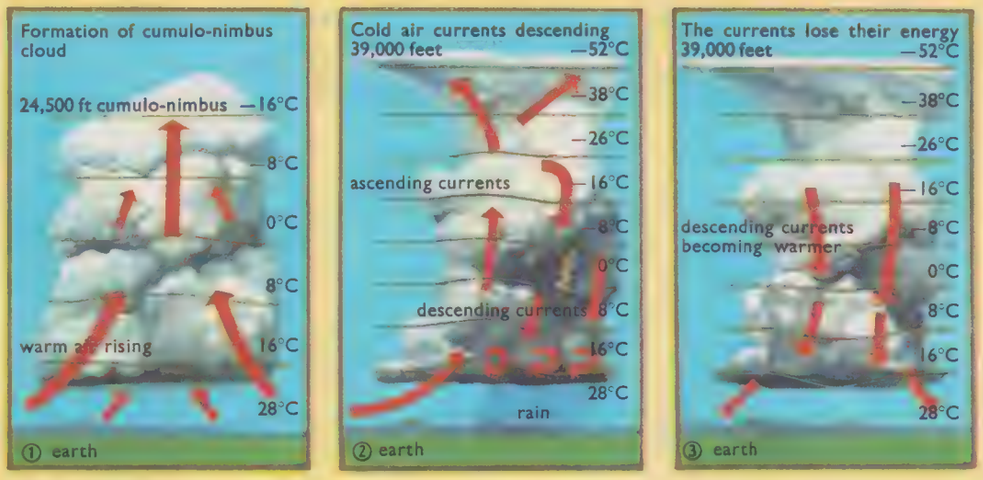
pressure and warmer air in the middle latitudes at a lower pressure. We might expect the wind to blow directly from high to low; but due to the rotation of the earth the wind is diverted to the west. This causes the winds to spiral round and round the centre of low pressure. Such systems form the extensive depressions and anticyclones which you can see in weather maps in the newspapers and on television. Vortices of a smaller but far more intense nature are the tropical cyclones and tornadoes which cause devastation in the tropics.

When a mass of warm air from the tropics meets a mass of cold air from the poles the two do not immediately mix together. The boundary between them is called a front or disturbance. *Since the cold air is denser it will force its way under the warm air, causing it to rise; the water vapour condenses and rain falls*



STORMS

A storm is a disturbance in the atmosphere which is usually accompanied by strong winds and bad weather. There are several types of storm; besides windstorms there are rainstorms, hailstorms, and duststorms. One type of storm may be called by several different names in different parts of the world. The most violent storm experienced in Britain is the thunderstorm. It occurs when a layer of warm air near the ground becomes unstable and forms a current of air ascending to displace the cold air above it. There may be many reasons for this, one of which is the presence of a front (see picture below, left).

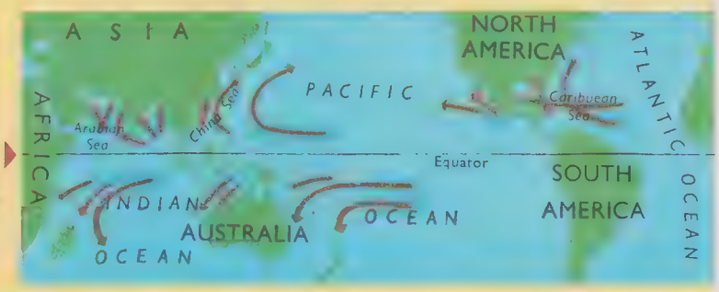


A thunderstorm develops in three stages:

① The warm air rises and cools because the pressure on it is reduced. The water vapour in the air condenses, first as water droplets, and as the air rises higher, as ice crystals. A thunder cloud or *cumulo-nimbus* cloud is formed.

② Raindrops and hailstones form in the cloud; at first they are buoyed up by the rising air, and act as a brake, slowing it down until they begin to reverse it. When they are heavy enough rain and hail fall, and thunder and lightning occur.

③ The falling rain and hail stones reverse the air flow, causing a strong descending current of air. This produces a cold wind blowing out from under the cloud. No more warm air is added to the cloud, the rain becomes steadier, and the currents become thoroughly mixed. The winds grow weaker and the storm dies away.



The map on the right shows where tropical cyclones occur (marked in darker blue). The brown arrows indicate their course. They all originate over a tropical ocean and tend to drift towards land, leaving chaos in their wake

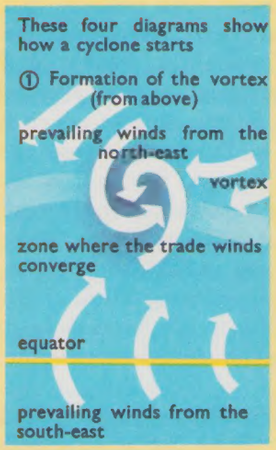
STORMS

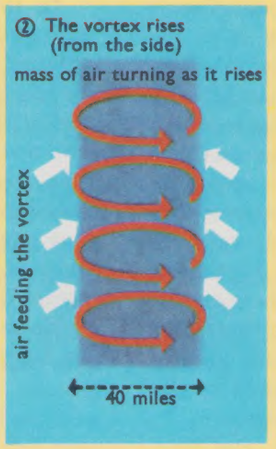
TROPICAL CYCLONES

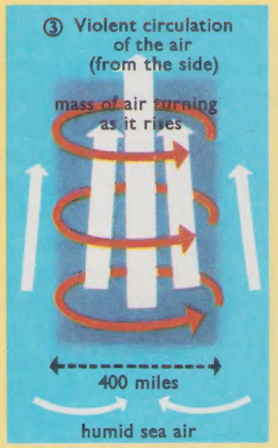
A tropical cyclone is a destructive type of storm, sometimes called a tropical revolving storm.

It is called a hurricane when it occurs in the Caribbean area; a typhoon when it arises over the China Sea and near the coasts of East Asia; and a willy-willy around the coasts of Australia.

A tropical cyclone begins over the ocean, and it is so violent that the sea is whipped up into a frenzy of gigantic waves. Torrential rain is blown almost horizontally by the wailing winds, and thunder-claps continually rend the air. Ships and aeroplanes take great care to avoid such extreme weather.


These four diagrams show how a cyclone starts
① Formation of the vortex (from above)
prevailing winds from the north-east
vortex
zone where the trade winds converge
equator
prevailing winds from the south-east





① A tropical cyclone begins when a mass of warm moist air moving over an equatorial ocean becomes unstable; this happens particularly where trade winds meet. The warm air is caused to spiral upwards – anticlockwise north of the equator and clockwise south of the equator.

② The warm air reaches the centre of the spiral, and as the pressure here is lower it expands and cools. Any water vapour in the air condenses as the air cools. But the latent heat given out during condensation helps to reduce any further cooling, so the air is made more buoyant and rises upwards even faster.

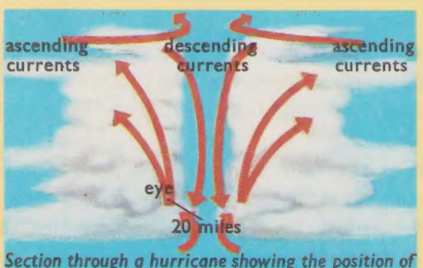
③ At the same time more warm moist air is drawn into the spiral. The amount of condensation and heat liberated continually increase, so the air in the centre spirals upwards more and more violently.

④ As more air is sucked in the cyclone becomes a gigantic vortex; and the sky becomes black as night, with thick masses of cloud.

THE EYE OF THE TROPICAL CYCLONE

It seems incredible, but inside this frightening and powerful storm there is usually an area of calm that is completely unaffected. This area is known as the 'eye of the tropical cyclone'.

We have already seen that the tropical cyclone takes the form of a gigantic vortex, a funnel of winds rotating at a very high speed. This rotation generates a very strong centrifugal force which tends to push the masses of air and cloud outwards, leaving a quiet space in the middle which may be 10 to 20 miles across. This remarkable area, above which the sky is blue and serene, is the 'eye'.



Section through a hurricane showing the position of the 'eye'

THE TERRIFYING JOURNEY OF A TROPICAL CYCLONE

A tropical cyclone is more dangerous still because it moves, often covering hundreds of miles, causing costly damage if its path is over land. At the beginning it has a diameter of about 100 miles, but when it is driven by the wind and begins to move this diameter increases very quickly.

The winds reach terrifying speeds (from 90 to 125 m p h, with gusts up to 190 m p h) and the speed of the whole body of the cyclone may be up to 25 m p h. Its total diameter can be up to 500 miles, but the area of maximum power and destruction is usually only tens of miles wide.

THE TORNADO

A tornado has the appearance of a long, narrow funnel 3,000 to 4,500 feet high and a few hundred yards wide. It starts as a vortex motion in a low dark cloud which then spreads down towards the earth and becomes an intensely violent whirlwind. Sometimes it becomes almost black with the dust that it picks up. Its approach is heralded by a peculiar whistle, which becomes more and more deafening and terrifying as it draws nearer. A tornado travels fast – at about 40 m p h, and can reach a speed of 125 m p h. It is smaller than a hurricane, but more destructive. Its fast circular motion leaves a very low pressure in its centre, and the houses that stand in its way literally burst, because the pressure inside them is far greater than that in the middle of the tornado.

THE WATERSPOUT

Waterspouts are tornadoes that form over water. They 'suck' up a mass of sea water, forming a column of spray 60 to 180 feet high, 5 to 60 yards across. They move quite slowly – 15 to 20 m p h. They are most common in the tropics and in the warm waters of the South Pacific and the Gulf Stream.

ALEXANDER POPE

'DESCEND in the name of God to some other amusements as common mortals do. Learn to play at cards, or tables, or bowls; get talking females . . .' In these words Swift, Pope's great friend, urged him to find some other pleasure in his life than work. But Pope had little use for anything but his work. Nature had endowed him cruelly. He grew to be only 4 feet 6 inches tall, and he had a curvature of the spine which gave him a grotesquely deformed appearance. Occasionally he could laugh at his shape, likening himself to a dog, a spider, or a frog. But in reality it brought him lasting unhappiness and gave him an obsession to achieve perfection and complete beauty in his poetry. And it is astonishing that (as Beethoven overcame his deafness) Pope overcame his shape to become not only the greatest poet of the 18th century but one whose works have gone through more editions and brought him greater fame, both in his own day and later, than any poet in the English language, with the single exception of Shakespeare.

Alexander Pope was born in Lombard Street on 21st May 1688, the son of a Roman Catholic linen draper. In about 1700 his father retired with a small fortune to Binfield in Windsor Forest. As a child Pope was a swot; and it was his ceaseless studying which aggravated his deformity and stunted his growth. Pope was born in the year that William of Orange overthrew the Stuarts, and thus, as well as his other disadvantages, he suffered for his faith in an age of Protestant ascendancy. He was debarred from important jobs and subject to double taxation. Yet by the time he was 17 he had been introduced to many leading Catholic literary figures in his neighbourhood like Trumbull, Dancastle, and Englefield, and through them he became introduced to the fashionable circle of 'London wits'.

In the early 18th century literature was one of the social graces, and poetry was written for exclusive and highly critical groups of socialites. Much of Pope's greatness lies in his flawless technical ability, especially in the incredibly varied use of the heroic couplet which he developed along the lines laid down by Dryden (see page 2222). He supported the Tories, who were opposed to the Protestant Whigs, and he became a member of the famous 'Scriblarus' club whose major task was a war against bad writers (or 'dunces') who wrote in the Whig interest. Late in life he joined a literary attack on the all-powerful Whig Prime Minister Robert Walpole.

He published *The Pastorals* in 1709, which were followed by an *Essay on Criticism* containing the immortal lines:

> *'A little learning is a dangerous thing;*
> *Drink deep, or taste not the Pierian spring:*
> *There shallow drafts intoxicate the brain,*
> *And drinking largely sobers us again——'*

Next came *The Rape of the Lock*, which was a brilliant mock-heroic poem aimed at reconciling two Catholic families who had quarrelled over a stolen lock of hair. His wit gained him many admirers, but also some enemies like the critic John Dennis whom Pope had abused in his *Essay on Criticism*. Dennis replied by scoffing at Pope's deformity and size, and similar bitter quarrels were to recur throughout Pope's life. In 1717 Pope published his *Collected Works*, which included an *Elegy on an Unfortunate Lady*, and *Eloise to Abelard*, and in 1725 he completed a masterly translation of Homer and a new edition of Shakespeare. In 1719 he had bought a large house in Twickenham, and the financial success of his writings enabled him to live there in comfort. He was devoted to his mother, with whom he lived, and was tireless in his attentions to her until she died in 1733.

Not a scheming monster

From descriptive poems and mock-heroics he turned his attention to satire and launched a series of attacks on those bad writers whom he despised. His greatest satire was the *Dunciad*, which was first published in three books in 1728, in which many of his literary enemies like Theobald, Cibber, and Dennis were ridiculed. In a new edition in 1742 Cibber replaced Theobald on the 'Dunce's throne'. He once summed up the typical dunce or pedant:

> *'Pains, reading, study are their just pretence,*
> *And all they want is spirit, taste, and sense.'*

Pope was the first poet, with neither rich patronage nor official position, to make writing pay. His character was one of contradictions, alternately vicious and surprisingly kindly. It would be strange if his disabilities had not warped his view of life, and yet the picture of the 'scheming monster' drawn by many Victorian (and Protestant) critics is untrue. His quarrels were as much his enemies' fault as his own. And he handled the English language with a dexterity which is unrivalled in the history of English literature.

◀ *Alexander Pope*, 1688–1744, *English poet and satirist*

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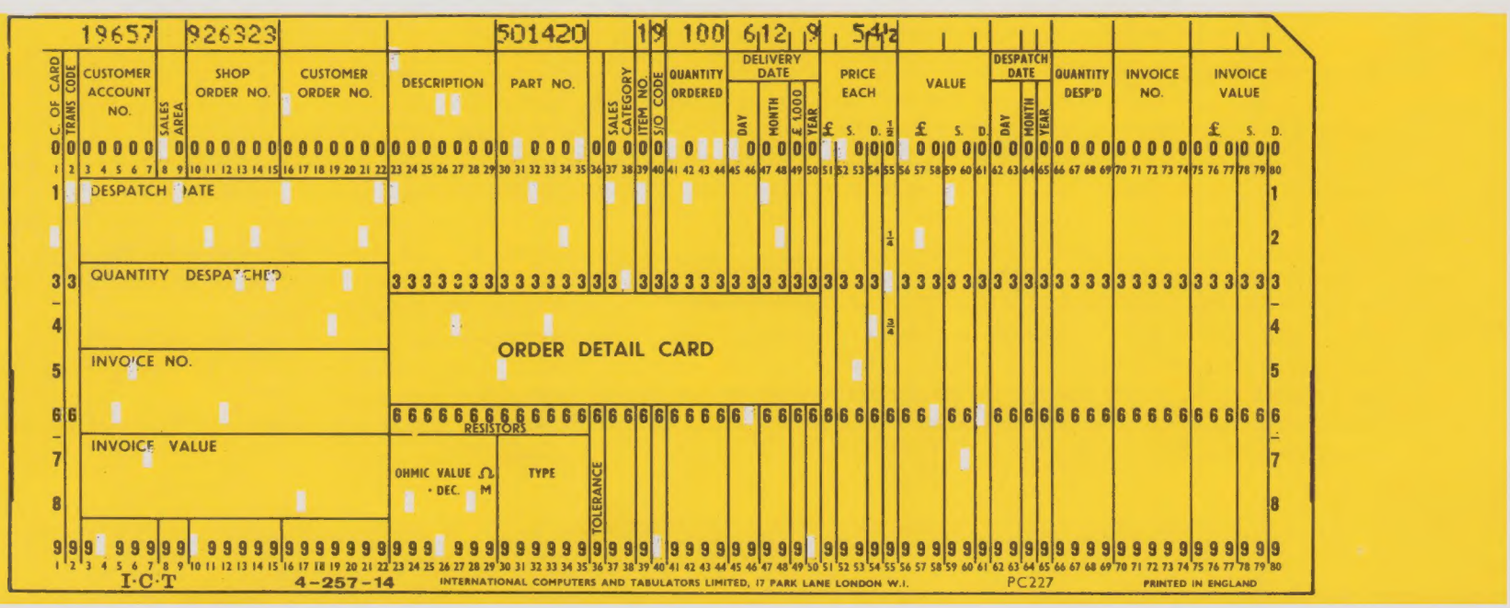
Thus both the owner of the business and the shareholder had need of a highly qualified person to check the income and expenditure of the business. The result was the appearance of the professional accountant.

Associations of accountants were formed whose aims were to fill this need and to gain official status and recognition for their profession, as well as to see that their members maintained certain standards. The first association was formed in Edinburgh in 1853, and the following year it was granted a Royal Charter. In 1880 the Institute of Chartered Accountants in England and Wales was founded and received its Royal Charter the same year; the membership of this famous institute now exceeds 36,000. Three Scottish societies amalgamated in 1950 to form the Institute of Chartered Accountants of Scotland. The Institute of Chartered Accountants in Ireland was incorporated by Royal Charter in 1888.

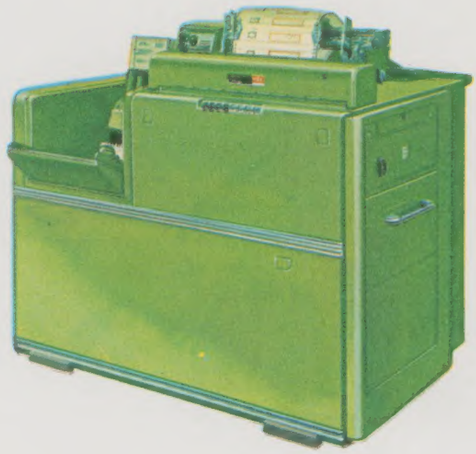
The members of these bodies are called *chartered accountants* after the Royal Charter granted to these institutes. A number of other societies of accountants now exist, one of the most important being the Association of Certified and Corporate Accountants which has a membership of over 11,000. Members of two other societies, the Institute of Cost and Works Accountants and the Institute of Municipal Treasurers and Accountants, operate in special fields of accountancy, as their titles imply.

Societies of accountants are established in almost every country in the world. The largest of all, with a present membership exceeding 40,000, was founded in the United States over 75 years ago; it is now known as the American Institute of Certified Public Accountants. The Institute of Chartered Accountants in Australia has the distinction of being the only body of accountants outside the United Kingdom and Ireland which was incorporated by Royal Charter, this being granted in 1928.

Facts and figures can be recorded on cards like the one below. A special machine, operated in much the same way as a typewriter, punches holes in special positions on the card; each hole represents a letter or number. This information can be stored until needed, or fed into a computing machine which adds, subtracts, multiplies, or compares it with other information. The final results are printed by a tabulator, a machine which translates the holes into words and figures



Accounting machines greatly speed up the routine copying and calculating of an accounts department. This IBM machine works 120 times faster than a clerk. Punched cards containing a variety of information are fed into it



The most important development in accountancy in recent years has been the increasing use of computers or advanced calculating machines. The first calculating machine was invented in the 17th century – but it was not until the late 19th century that, through the efforts of Burroughs and Wahl, any great advances were made. Today there are large firms whose entire business is to equip organisations with complex calculating machines which have cut to a fraction the routine work in an accountant's department.

The accountant today

Today the accountant is much more important than the bookkeeper used to be – although his book-keeping role has by no means been discarded. There are many sides to his work, and the good accountant should be familiar with all of them. Broadly speaking, there are today two sorts of accountant,

No. 145 Volume 13

Knowledge

Printed in Great Britain by Purnell & Sons Limited
Paulton, Nr. Bristol

Published by arrangement with
Fratelli Fabbri Editori
Milan

© 1960 Fratelli Fabbri Editori Milan

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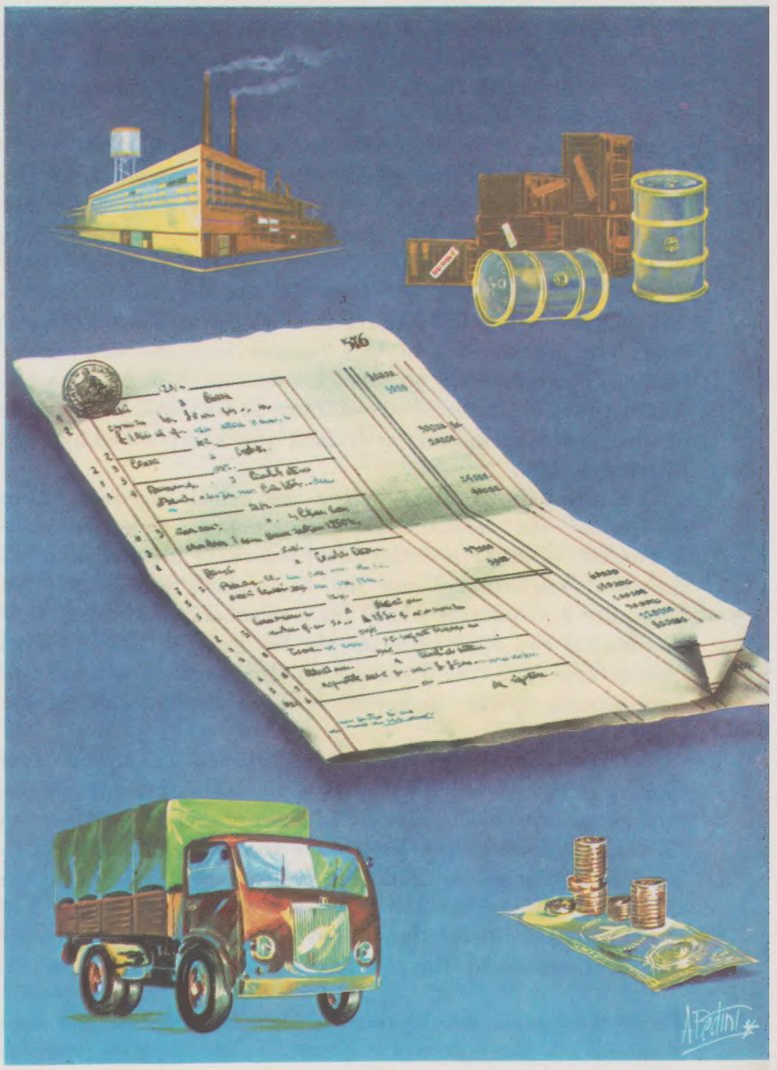
although their functions often overlap. These are the accountant in public practice who is attached to an independent firm of accountants, and the accountant employed directly by a firm or organisation.

The public accountant

The main work of the public accountant is *auditing* (checking) the accounts of publicly or privately owned companies. Every registered company must have its accounts audited by an independent firm of accountants. This is to satisfy the shareholders and other interested parties that the accounts presented to them show a true and fair view of the profit or loss for that financial year, and the state of affairs at the end of the year. An important part of the public accountant's work is finding out how much tax an individual or firm must pay. He can also act as a *liquidator*; if a firm is being wound up (going into *liquidation*) an accountant usually supervises the arrangements. An accountant can also manage sums of money or property on behalf of someone else – in fact, be a *trustee*. He can purchase property or businesses. His services are needed to *float* (form) new companies. He can act as an *executor* (see that the terms of a will are carried out). His services, in fact, are needed wherever money is involved. He is often consulted by firms or individuals on how to manage their affairs. He may be asked for advice about the latest accountancy methods and must know all about the latest equipment. A firm of public accountants usually has special departments to deal with different matters.

Other sorts of accountant

Most firms and organisations have accountants of their own. The day-to-day expenditure of the firm must be checked and supervised; adequate records of profit and loss must be kept; taxation returns must be worked out; wages must be paid, and so on. The accountant is asked to give financial advice, for it is money that makes the wheels of industry go round. Marketing a new product; research into new production methods; the decision to build a new plant or open a new branch, all depend on money being available. The accountant is therefore at the very centre of the firm's life.



Today accountancy is of vital importance. The accountant's figures control the destinies of vast industrial empires

A career in accountancy

Qualifications needed to become an accountant vary, and for full details you should contact the appropriate bodies of accountants in your country. The address of the Institute of Chartered Accountants in England and Wales is Moorgate Place, London E.C.2; that of the Institute of Chartered Accountants of Scotland, 27 Queen's Street, Edinburgh 2.

To become a chartered accountant in Great Britain, articles of apprenticeship must be served in a firm of public accountants. This takes three years for university graduates, and five years for non-graduates. If the apprentice, known as an articled clerk, passes all his exams (and they are by no means easy ones) he is eligible for admission into the appropriate institute. He can stay on with the firm with whom he has served his articles and he may in time become a partner; or he may set up in practice on his own. He can move into industry or any large organisation where there are many posts open to him. In industry he can become a company secretary, internal auditor, cost accountant, or financial controller. Most companies have at least one accountant on their board of directors, and many great companies have accountants as chairmen or managing directors.

Chartered accountants are by no means the only sort of accountants, however. The others do not have to work in a firm of public accountants, but can take their examinations while working in the accountancy or financial department of any approved firm.